

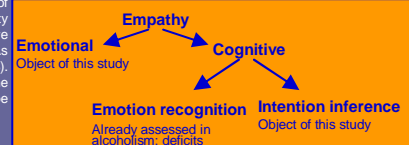
# Capacities of cognitive and emotional empathy in relationship to interpersonal difficulties in alcohol-dependant patients (AD)

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## INTRODUCTION

The term empathy refers to two related human abilities: mental perspective taking (cognitive empathy) and the vicarious sharing of emotions (emotional empathy). The research in alcoholism empathy has focused around one aspect of cognitive empathy - the capacity to infer an emotional state - and that essentially on the basis of emotional facial expression (EFE) recognition. However, researchers have shown little interest in the investigation of the other aspects of cognitive empathy: the capacity to infer interpersonal intentions. As documented by the research on EFE decoding, AD patients show deficits in cognitive empathy (review in Uekermann and Daum, 2008). Emotional empathy has not been investigated in this population yet. In this study, we will distinguish AD patients according to the Cloninger subtypes of alcoholism (Cloninger et al., 1981). Type 1 AD patients are known to drink to avoid negative emotions whereas type 2 AD patients are looking for positive emotions.



### Objects and hypotheses

- To explore the association between capacities of both aspects of empathy and interpersonal difficulties in AD patients. We hypothesized that capacities of empathy would be correlated to the quality of interpersonal relationships.
- To investigate the capacity of AD patients to infer interpersonal intentions in social situation (cognitive empathy). We hypothesized that AD patients compared to healthy individuals will attributed more intentions of reject and of aggressiveness, and less intentions of affiliation to other people on the basis of their EFE.
- To explore the emotional feeling state of AD patients in function of the EFE display by other people (emotional empathy). We hypothesized that the modulation in AD patients will be different from the one of healthy people in function of the Cloninger subtype of alcoholism. This emotional reactivity will be more important in Type 1 alcoholism and less important in Type 2 alcoholism.

## METHODS

### Participants

Seventeen men and 12 women type 1 AD patients, 15 men type 2 AD patients, 12 men and 8 women healthy subjects participated to the study. AD patients were abstinent for at least three weeks. Type I AD patients were compared to controls because of their sex ratio homogeneity, whereas type II AD patients were compared to men AD type I and to men controls. The participants completed questionnaires assessing their usual quantity of alcohol consumption, and, for AD patients, their level of alcohol dependence (SADO; Stockwell et al., 1983). Their capacity to recognise faces was evaluated by the Benton facial recognition test (Benton et al., 1983).

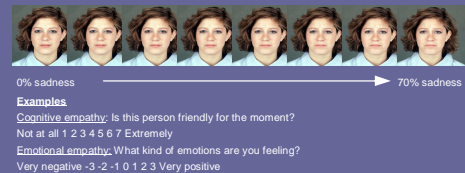
### Measures

- Quality of interpersonal relationship: Questionnaire that investigated the quality of the relationship with the person the closest to you and the quality of the relationships with people from your entourage
- Cognitive empathy: the participants had to evaluate the adequacy (in a 7-point Likert scale) between a film of a face changing from a neutral EFE to an emotional EFE of 70% intensity (the photographs come from the material of Matsumoto & Ekman, 1988) and an adjective descriptive of personality. The emotions investigated were anger, disgust, sadness, contempt, and joy. Each adjective was weighted on the interpersonal dimensions of reject, aggressiveness, dominance, and affiliation.
- Emotional empathy: the participants had to evaluate their own emotional feeling state (in a 7-point Likert scale; from very negative to very positive) after watching a series of films depicting EFE (same material as before). The level of emotional contagion for each emotion was calculated by subtracting the score on the 7-point Likert scale after watching the EFE from the evaluation of the emotional feeling state of the participant with the same scale in a neutral condition.

Cloninger subtype classification according to the criteria from von Knorring et al. (1985).

•Type 2 AD patients: subjective alcohol problems should have started before the age of 25 and there should have been at least two instances of social complications such as (1) violence while intoxicated, (2) absence from work, (3) loss of job, (4) legal difficulties, (5) arguments or difficulties with family or friends because of excessive alcohol abuse.

•Type 1 AD patients: The others



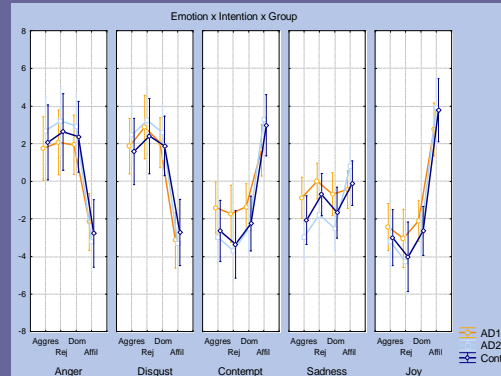
	Men Type 1 (n=17)	Women Type 1 (n=12)	Men Type 2 (n=15)	Men Controls (n=12)	Women Controls (n= 8 )
Age (in years) <sup>NS</sup>	47.59 (6.87)	42.00 (7.63)	43.87 (6.27)	43.33 (9.94)	46.00 (9.05)
Education (in years) <sup>NS</sup>	11.12 (3.55)	12.91 (2.17)	12.79 (2.59)	11.17 (3.21)	13.07 (3.95)
Age at the beginning of problems <sup>a</sup>	36.47 (6.97)	34.08 (5.74)	18.87 (5.01)	/	/
Number of weaning cure <sup>a</sup>	2.53 (1.94)	2.00 (0.95)	7.2 (5.53)	/	/
Level of alcohol dependence (SADO) <sup>NS</sup>	29.88 (12.12)	30.75 (15.44)	37.06 (15.01)	/	/
Mean number of standard drink a week <sup>b</sup>	145.03 (111.40)	115.49 (85.66)	172.06 (107.59)	7.73 (5.52)	9.48 (10.32)
Benton facial recognition test <sup>NS</sup>	45.12 (2.69)	46.00 (3.91)	45.94 (5.22)	46.36 (3.61)	46.62 (4.10)

<sup>a</sup> AD1M = AD1W ≠ AD2; <sup>b</sup> AD > controls

## RESULTS

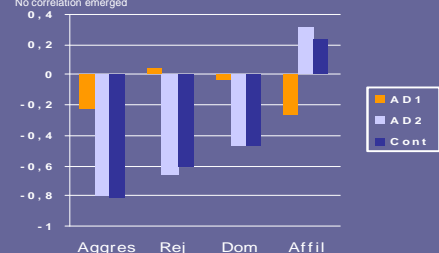
### AD1 vs. Controls

- Cognitive empathy: 5 (emotion) x 2 (sex) x 4 (intentions) x 2 (group)  
No interaction involving both factors of Intentions and of Group emerged
- Emotional empathy:  
- 5 (emotion) x 2 (group): No Group effect and no interaction between Group and Emotion emerged  
- A coefficient of contagion was computed by adding up the absolute values of the scores of emotional contagion (emotional score - neutral score) for each emotion: No group difference emerged
- Relation between empathy and the quality of interpersonal relationships  
No correlation emerged



### Men AD1 vs. Men AD2 vs Men Controls

- Cognitive empathy: 5 (emotion) x 2 (sex) x 4 (intentions) x 2 (group)  
Intention x Group:  $F(8, 129) = 2.45; p = .03$   
Emotion x Intention x Group:  $F = 1.56; p = .04$   
Sex x Intention x Group:  $F = 3.73; p < .01$
- Emotional empathy:  
- 5 (emotion) x 2 (group): No Group effect and no interaction emerged  
- No group difference emerged for the coefficient of contagion
- Relation between empathy and the quality of interpersonal relationships  
No correlation emerged



## CONCLUSIONS

•Cognitive empathy: The difference between AD patients and healthy subjects in terms of attribution of intentions are only apparent in men when distinguishing type 1 and type 2.

- Globally, type 1 AD patients attributed more intentions of aggressiveness and of reject and less intentions of affiliation to EFE compared to type 2 and to controls. More specifically, this pattern was true for the emotions of joy, contempt, and sadness but was the reverse for anger. Thus, type 1 AD patients saw less aggressiveness in an aggressive emotion (anger), less affiliation in affiliative emotions (joy and contempt, which seems to be understood as a positive emotion due to the presence of a smile), and more dominance in a submissive emotion (sadness) compared to the others groups. Moreover, the general pattern of intentions attribution is more flat in type 1 AD patients compared to controls and even more to type 2 AD patients. This flat pattern is concordant with the fact that type 1 alcoholism is usually an alcoholism reactive to depression, depression which is characterized by flat affects. At the opposite, type 2 AD patients are more excessive in their attribution of intentions, an excessive behavior that could be seen in parallel to their excessive and impulsive way of drinking.
- These results are in line with past studies that show EFE decoding problems in AD patients (Uekermann & Daum, 2008). They suggest that AD are not only mistaken in the recognition of EFE but that they anticipate also in a biased way the relationship with the person in front of them. However none of the past studies on EFE decoding have distinguish AD according to the Cloninger typology yet. The category of emotions that are not well recognized in these studies are quite inconsistent. The distinction of alcoholism according to the Cloninger subtypes could be a cue to reduce this inconsistency.

•Emotional empathy: The absence of difference between AD patients and healthy subjects in their emotional contagion to EFE could be due to the small number of participants or the methodology used. Indeed, the purpose of the study is perhaps too obvious for the participants and thus reflect more social desirability.

•Relationship between empathy and the quality of interpersonal relationships: the measures of empathy used were not correlated with the measure of relationship quality as opposed to our hypotheses.

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